CHAPTER 2
PROPOSED ACTION AND ALTERNATIVES

This chapter describes the Navy's Proposed Action and alternatives for the NAVSEA NUWC Keyport Range Complex extension. It is divided into four major subsections: Section 2.1 *Overview of Alternatives Selection Criteria*; Section 2.2 *No-Action Alternative*; Section 2.3 *Proposed Action and Alternatives* (including an overview description of the Proposed Action, the action alternatives for each of the three range sites, and Standard Range Operating Policies and Procedures); and Section 2.4 *Alternatives Considered but Eliminated from Detailed Consideration*.

Chapter 2 uses "example scenarios" to augment the descriptions provided in Section 1.3.3 of typical RDT&E activities conducted at the three range sites. Example scenarios are also used to describe the types of RDT&E activities that may occur within the proposed range extension at each site. The example scenarios are not intended to bound the types of activities at each of the range sites. Other activities would be conducted within each of the range sites. The potential Range Complex activities cannot all be described through limited scenarios, so the parameters of various propulsion, acoustic, and mechanical systems are analyzed individually. Other types of potential systems to be tested at each of the range sites would be evaluated against the current analysis to determine if they fit within the parameters established in this EIS/OEIS.

2.1 OVERVIEW OF ALTERNATIVES SELECTION CRITERIA

CEQ regulations (40 CFR 1502.14) and Navy Procedures (32 CFR 775) provide guidance on the consideration of alternatives in an EIS/OEIS and promote the objective evaluation of all reasonable alternatives. Reasonable alternatives must meet the stated objectives and purpose and need for the Proposed Action. As discussed in Section 1.2, the purpose of and need for the action are based on range requirements necessary to support continued testing, training, and evaluation of evolving manned and unmanned vehicle technologies and capabilities in multiple marine environments. Such range requirements have been defined by NAVSEA to include a broader diversity of sea state conditions, bottom type, water depth, and increased range capacity to maneuver vehicles and combine test activities. These requirements were used to develop the following alternatives selection criteria, which were in turn used to identify the range of reasonable action alternatives that would achieve the defined objectives:

- Proximity to NUWC Keyport facilities and existing NAVSEA/NUWC Keyport Range Complex sites;
- Variable water depths from shore to 4,500 ft (1,372 m) depth for a variety of test platforms;
- Surf-zone access to simulate hostile littoral threat areas;
- Multiple salinity and bathymetry types to simulate in-situ physical and operational environments of selected threat areas of the world;
- Locations where simulations can be provided to test collision avoidance in a safe manner;
- Various range sizes suitable to test search capabilities;
- Environment with approach and transit of several miles for launch platform standoff and endurance testing;
- Ability to conduct multiple test scenarios on an individual system within a variety of specialized environments located in close geographic proximity; and
- Realistic navigational hazards, interference, and shipping traffic.

With the exception of the No-Action Alternative (as described below), only alternatives that would satisfy these criteria were considered reasonable and were carried forward for detailed evaluation in this EIS/OEIS (Section 2.3). Alternatives that were considered but eliminated from detailed consideration based on these criteria are described in Section 2.4.

2.2 NO-ACTION ALTERNATIVE – CONTINUE CURRENT RANGE SITE ACTIVITIES

Under the No-Action Alternative, current activities would continue to be conducted on all three range sites and would continue to fit within the existing range dimensions currently established for the NAVSEA NUWC Keyport Range Complex. While implementation of the No-Action Alternative would not satisfy the purpose and need for the action, it is carried forward for further analysis as required under CEQ regulations.

Annual activities broken out by activity type are shown in Table 2-1. Currently, NUWC Keyport schedules the Keyport Range Site to be used an average of 55 days/year, the DBRC Site an average of 200 days/year, and the QUTR Site an average of 14 days/year of offshore use and minimally for surf-zone activities.

Table 2-1 Current NAVSEA NUWC Keyport Range Complex Activities (No-Action Alternative)

Range Activity	*Platform/Systems Used*	*Current Estimated Number of Activities/Year** *Keyport Range Site*	*DBRC Site*	*QUTR Site*
Test Vehicle Propulsion	Thermal propulsion systems	0	130	20
	Electric/Chemical propulsion systems	45	140	10
Other Testing Systems and Activities	Submarine testing	0	45	10
	Inert mine detection, classification and localization	5	20	5
	Non-Navy testing	5	5	5
	Acoustic & non-acoustic sensors (e.g., magnetic array, oxygen)	20	10	5
	Countermeasure test	5	50	5
	Impact testing	0	10	5
	Static in-water testing	10	10	5
	UUV test	45	120	20
Fleet Activities** (excluding RDT&E)	Surface ship activities	1	10	10
	Aircraft activities	0	10	10
	Submarine activities	0	30	30
	Diver activities	45	5	10
Deployment Systems (RDT&E)	Range support vessels:			
	Surface launch craft	35	180	30
	Special purpose barges	25	75	0
	Fleet vessels***	15	20	20
	Aircraft (rotary and fixed wing)	0	10	20
	Shore and pier	45	30	0

* There may be several activities in 1 day. These numbers provide an estimate of types of range activities over the year.

** Fleet activities in the NAVSEA NUWC Keyport Range Complex do not include the use of surface ship and submarine hull-mounted active sonars.

*** As previously noted, Fleet vessels can include very small craft such as SEAL Delivery Vehicles.

2.2.1 Current Keyport Range Site Activities

Table 2-1 lists the varied test and evaluation activities that currently occur at the Keyport Range Site in a typical year. Figure 2-1 illustrates an example scenario within the existing range site. The scenario consists of a combined shallow-water target field evaluation and personnel training using a UUV within existing range boundaries. A portable tracking system may be deployed in each test area for tracking the UUV. In this example scenario, the tracking system operates at a frequency of 75 kHz and a source level of less than 195 dB re 1 µPa @ 1 m. The primary objective is to demonstrate operational capabilities by conducting tests on a shallow-water target field. Secondary objectives are to test the UUV launch method and provide training opportunities for Navy personnel. The UUV is deployed from the NUWC Keyport Pier using a pier-side crane, and retrieval occurs using a small boat, divers, and pier-side crane; target shapes are positioned prior to, and recovered subsequent to, the test activity. The estimated time for the test, including set up and retrieval, is 3 to 6 hours. The combination of the following characteristics provides a unique testing environment at the Keyport Range Site: shallow depth (shore to 90 ft [27 m]), varying topography, shore-to-shore surveillance, shore facilities, and realistic navigational hazards (e.g., boat traffic).

2.2.2 Current DBRC Site Activities

Table 2-1 lists the current annual activities conducted at the DBRC Site. An example scenario within the existing range site is shown in Figure 2-2. The primary objective under this example scenario is a 72-hour endurance mission to evaluate the UUV's navigational accuracy. Secondary objectives include obtaining the UUV radiated noise signature and demonstrating performance of UUV onboard sensors, including the side-scan sonar and the Acoustic Doppler Current Profiler. A passive acoustic sensor is used to obtain a radiated-noise signature of the UUV.

The tracking sonar is active prior to and after the test run to locate the sensor accurately for post-test run analysis. A hydrophone is used to measure surrounding (ambient) noise prior to the test runs and after the test runs for comparison to vehicle-radiated noise that is acquired during the run. During this example scenario, active sonars (side-scan sonar, acoustic Doppler current profiler, and tracking sonars) emit at source levels of 203-233 dB re 1 µPa @ 1 m and at frequencies of 10 to 700 kHz. The total estimated operational test time is approximately 80 hours, including UUV launch and retrieval.

The combination of the following characteristics provides a unique testing environment at the DBRC Site. These characteristics include moderately deep water, permanent bottom-mounted instrumentation for Fleet submarine safety and navigation, shore-to-shore surveillance, and capability for barge access (retrieval/moorage). The bottom of the DBRC Site is unique compared to the other two range sites in that it has steep side walls with depths up to 600 ft (183 m).

2.2.3 Current QUTR Site Activities

Activities currently conducted at the QUTR Site are listed in Table 2-1; Figure 2-3 illustrates an example scenario for current activities within the QUTR Site. The primary objective of this example scenario is to test and evaluate shallow water acoustic sonar technology in a reverberant environment, with a diesel-electric submarine simulating a potential threat target. The example scenario consists of ranging a test vehicle with a diesel-electric submarine operating at periscope depth as described in the following sentences. The test vehicle (a torpedo in this case) is launched from the launch craft.

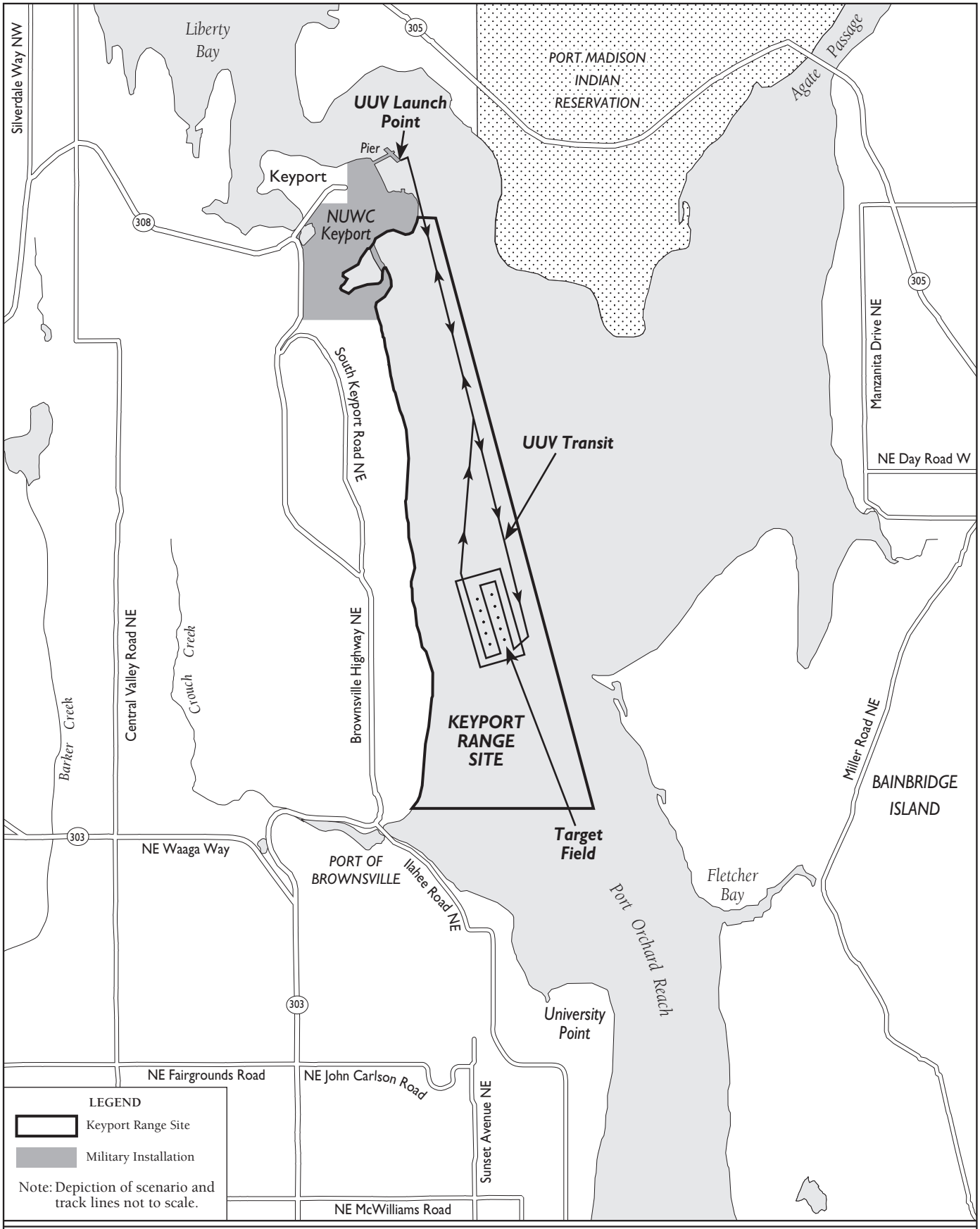

Figure 2-1
Keyport Range Site: Example Operational Scenario

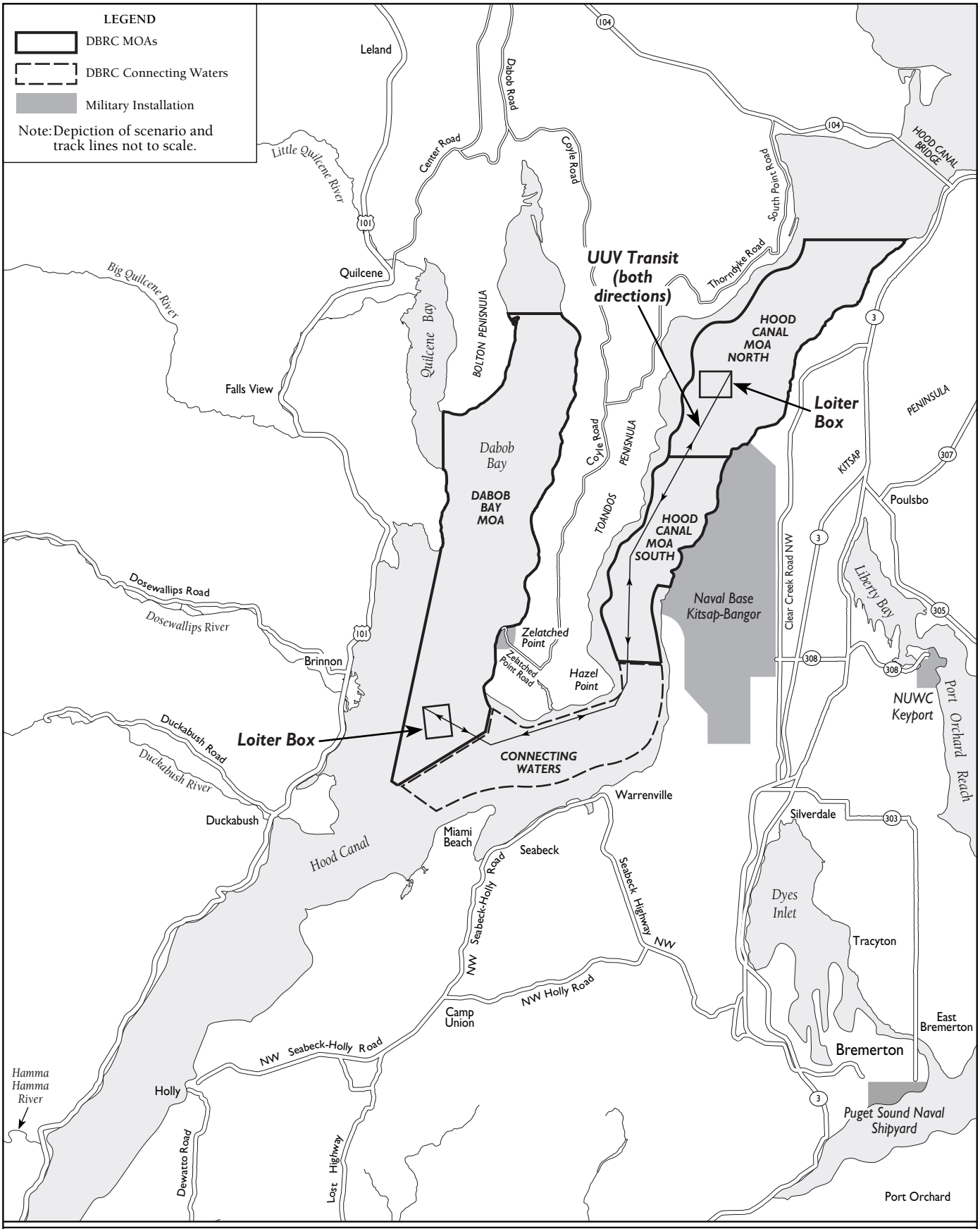

Figure 2-2
DBRC Site: Example Operational Scenario

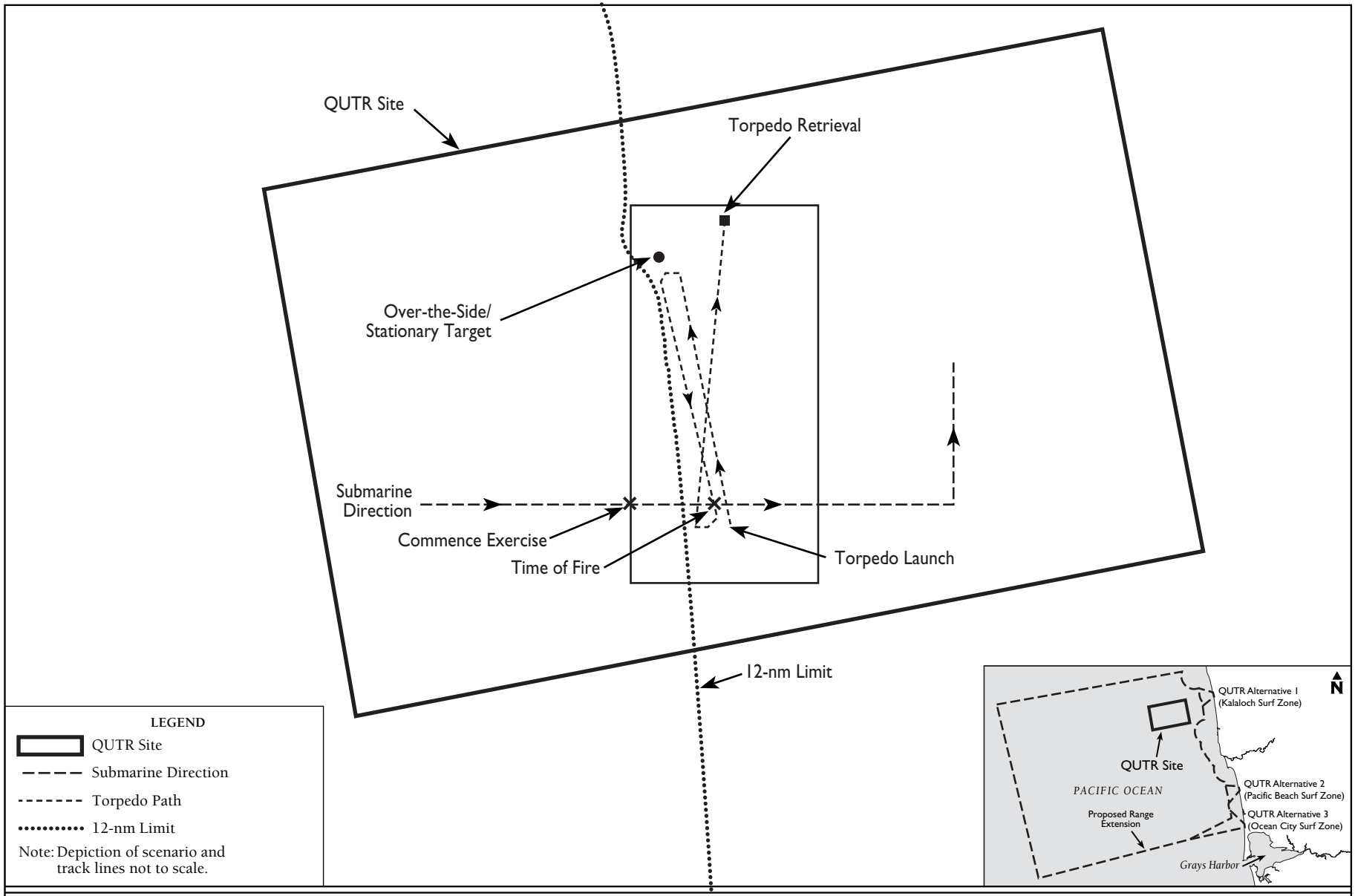

Figure 2-3
QUTR Site: Example Operational Scenario

To support this example scenario, the existing QUTR Site underwater-tracking equipment requires recalibration for high accuracy tracking capability. Portable tracking range assets would be deployed to supplement the underwater-tracking equipment. An additional range craft deploys the Over-the-Side/Stationary Target (schematic representation in Figure 1-6a). The submarine enters the range area at the commencement of the range exercise. The exercise torpedo is launched and makes its attack on the submarine and the over-the-side stationary target. Vehicle retrieval is accomplished through use of a retrieval craft. The estimated test time is 10 hours for the exercise and 2 to 10 days for range gear set up and removal.

In addition to tracking provided at the range, the range craft are equipped with global positioning system (GPS) tracking. The range craft transit to the range site for range activities. The test vehicle and associated support hardware are prepared in a NUWC Keyport shop and transported to KB Docks at Naval Base Kitsap-Bangor via truck for load-out onto the launch craft. During this test, active acoustic sources are at levels up to 226 dB re 1 μPa @ 1 m and at frequencies between 12 and 45 kHz. Upon completion of the test, all craft return to KB Docks for equipment offload. Current shore activities include maintenance and surveillance of: 1) cabling from Kalaloch; and 2) bottom-mounted instrumentation.

The combination of the following characteristics provides a unique testing environment at the QUTR Site. These characteristics include the proximity to Navy Fleet assets such as air operations, a large operational area for maneuvering multiple Fleet assets, and an open ocean environment. The bottom within the permanently mounted tracking range is hard sand bottom with mild slope and relatively shallow water (150-300 ft [46 – 91 m]). The hard sand bottom and shallow depths provide a very reverberant acoustic setting where multiple bounces can be used to test torpedo detection, classification and localization capability.

2.3 PROPOSED ACTION AND ALTERNATIVES

2.3.1 Proposed Action

The Navy proposes to extend the NAVSEA NUWC Keyport Range Complex in Washington State. The Proposed Action would provide additional operating space outside the existing operational areas to support existing and evolving range activities by NUWC Keyport. The scope of the Proposed Action includes only those activities scheduled and coordinated by NUWC Keyport. Other military operations currently occur within these areas (e.g., W-237A is used for a variety of military training activities outside of NUWC Keyport control). These other Navy training activities at the QUTR Site are being evaluated in the Northwest Training Range Complex EIS/OEIS and will be considered under cumulative impacts (Chapter 4) in this EIS/OEIS.

2.3.2 Action Alternatives

As the three range sites within the NAVSEA NUWC Keyport Range Complex are geographically distinct, the set of alternatives for one range site is independent of the set of alternatives for another range site. Therefore, action alternatives are presented for each range site separately. For each range site, one or more action alternatives have been identified in addition to the No-Action Alternative and are summarized below. When viewed collectively (i.e., for all three range sites in the NAVSEA NUWC Keyport Range Complex), all of the identified action alternatives satisfy the defined selection criteria described in Section 2.1.

- *Keyport Range Site*: Keyport Range Alternative 1 (Preferred Alternative) – extend range boundaries to the north, east and south, increasing the size of the range from 1.5 nm^2 to 3.2 nm^2 (5.1 km^2 to 11.0 km^2). The average annual days of use of the Keyport Range Site under this alternative would increase from the current 55 days to 60 days (Table 2-2).
- *DBRC Site*: DBRC Alternative 1 – extend the southern boundary of this range by approximately 10 nm (19 km), thereby increasing the total operating area from approximately 32.7 nm^2 (112.1 km^2) to approximately 44.0 nm^2 (150.8 km^2). DBRC Alternative 2 (Preferred Alternative) – extend the southern boundary by approximately 10 nm (19 km) and the northern boundary to 1 nm (2 km) south of the Hood Canal Bridge (Highway 104). DBRC Alternative 2 would increase the operating area at the DBRC Site from approximately 32.7 nm^2 (112.1 km^2) to approximately 45.7 nm^2 (156.7 km^2). The same numbers and types of activities would occur under each DBRC Site alternative and there would be no increase in average annual days of use above current levels (Table 2-2).
- *QUTR Site*: QUTR Alternative 1 – extend the range boundaries to coincide with the overlying special use airspace of W-237A plus locate an 8.4 nm^2 (28.8 km^2) surf zone at Kalaloch. The total range area under QUTR Alternative 1 would increase from approximately 48.3 nm^2 (165.5 km^2) to approximately 1,840.4 nm^2 (6,312.4 km^2). QUTR Alternative 2 (Preferred Alternative) – extend the range boundaries the same as Alternative 1 but locate a 7.8 nm^2 (26.6 km^2) surf zone at Pacific Beach instead of at Kalaloch. The total range area under QUTR Alternative 2 would be 1,839.8 nm^2 (6,310.2 km^2). QUTR Alternative 3 – extend the range boundaries the same as Alternative 1 but locate a 22.6 nm^2 (77.6 km^2) surf zone at Ocean City instead of at Kalaloch. The total range area under QUTR Alternative 3 would be 1,854.6 nm^2 (6,361.2 km^2). The same numbers and types of activities would occur under each QUTR Site alternative. The average annual number of days of use for offshore activities would increase under each QUTR Site action alternative from 14 days/year to 16 days/year in the offshore area. The average annual days of use for surf-zone activities would increase from 0 days/year to 30 days/year (Table 2-2).

Table 2-2 Current and Proposed Average Annual Days of Use by Range Site

	Keyport Range Site	*DBRC Site*	*QUTR Site – Offshore*	*QUTR Site – Surf Zone*
Current	55	200	14	0
Proposed	60	200	16	30

Each range site of the NAVSEA NUWC Keyport Range Complex encompasses a wide variety of test and training activities coordinated by NUWC Keyport. In order to comprehensively depict the variety of activities that would occur under the Proposed Action, representative example scenarios were developed to characterize the types of activities that would be conducted at each range site, although other activities would also occur as described in Section 1.3.3. Under the Proposed Action, specific components such as launch, retrieval, and recovery methods and propulsion systems are evaluated and the example scenarios indicate how these activities would occur on the three range sites.

The amount of expendable materials used is expected to increase with the increased number of activities that produce expendables. At the Keyport Range Site, the number of expendable materials used is expected to increase by approximately 10 for a total of 76 items expended annually. At the DBRC Site, the number of expendable materials used is expected to increase by approximately 84 for a total of 364

items expended annually. At the QUTR Site, the number of expendable materials used is expected to increase by approximately 222 for a total of 617 items expended annually. Tables 2-3, 2-4, and 2-5 list the current and proposed number of expendables used at the range sites.

Table 2-3 Current and Proposed Numbers of Expendables Used at the Keyport Range

Type of Expendable	*Current #*	*Proposed #*
Copper guidance wire (40 lbs)	3	3
Fiber optic guidance wire	2	2
Aluminum door	0	8
Lead dropper	0	0
Flex hose	0	2
Stainless steel suspension band	0	0
Small parachute (4ft diameter)	0	0
Countermeasure	1	1
Anchor clump (concrete)	10	10
Anchor line (e.g., rope)	20	20
Sandbag anchor with attached line (e.g., nylon line)	30	30
Total	**66**	**76**

Notes: Refer to Section 1.3.3.7 for a description of expendable materials.

Table 2-4 Current and Proposed Numbers of Expendables Used at the DBRC Range Site

Type of Expendable	*Current #*	*Proposed #*
Copper guidance wire (40 lbs)	80	80
Fiber optic guidance wire	10	20
Aluminum door	112	112
Lead dropper	4	4
Flex hose	6	6
Stainless steel suspension band	0	8
Small parachute (4ft diameter)	0	4
Expendable target (e.g., EMATT)	0	8
Countermeasure	2	10
XBT with un-coated copper wire	4	6
Anchor clump (concrete)	10	10
Anchor line (e.g., rope)	20	30
Torpedo fragment (1 lb)	12	24
Sandbag anchor with attached line (e.g., nylon line)	20	30
Nose cap	0	8
Release wire	0	4
Total	**280**	**364**

Note: Refer to Section 1.3.3.7 for a description of expendable materials.

Table 2-5 Current and Proposed Numbers of Expendables Used at the QUTR Range Site

Type of Expendable	*Current #*	*Proposed #*	
		Offshore	*Surf Zone*
Copper guidance wire (40 lbs)	8	12	0
Fiber optic guidance wire	2	3	1
Aluminum door	40	56	0
Lead dropper	4	4	0
Flex hose	6	8	0
Stainless steel suspension band	24	34	0
Small parachute (4ft diameter)	12	17	0
Expendable target (e.g., EMATT)	2	4	6
Countermeasure	40	56	0
XBT with uncoated copper wire	5	5	0
Anchor clump (concrete)	5	15	15
Anchor line (e.g., rope)	5	15	15
Torpedo fragment (100 lbs)	0	20	0
Sandbag anchor with attached line (e.g., nylon line)	10	30	15
Sonobuoy	200	200	0
Marine location marker	20	60	0
Nose cap	0	6	0
Release wire	12	20	0
Total	**395**	**565**	**52**

Note: Refer to Section 1.3.3.7 for a description of expendable materials.

Table 2-6 summarizes the proposed operational tempo and the key activities associated with the NAVSEA NUWC Keyport Range Complex proposal, and provides an estimate of the types of range activities that occur in a given year. In addition, the table lists the different types of platforms and/or systems that would be employed.

Propulsion systems, sensors, transmitters, data transfer technology, and deployment and retrieval methods do not remain the same over the years; as newer systems evolve, older systems will be retired. At that time, appropriate NEPA analysis will be undertaken if warranted. The following discussion focuses on the Proposed Action as it relates to each of the three range sites.

Table 2-6 Proposed Annual NAVSEA NUWC Keyport Range Complex Activities

Range Activity	*Platform/System Used*	*Proposed Number of Activities/Year**		
		Keyport Range Site	*DBRC Site*	*QUTR Site*
Test Vehicle Propulsion	Thermal propulsion systems	5	130	30
	Electric/Chemical propulsion systems	55	140	30
Other Testing Systems and Activities	Submarine testing	0	45	15
	Inert mine detection, classification and localization	5	20	10
	Non-Navy testing	5	5	5
	Acoustic & non-acoustic sensors (magnetic array, oxygen)	20	10	5
	Countermeasure test	5	50	5
	Impact testing	0	10	5
	Static in-water testing	10	10	6
	UUV test	45	120	40
	Unmanned Aerial System (UAS) test	0	2	2
Fleet Activities** (excluding RDT&E)	Surface Ship activities	1	10	10
	Aircraft activities	0	10	10
	Submarine activities	0	30	30
	Diver activities	45	5	15
Deployment Systems (RDT&E)	Range support vessels:			
	Surface launch craft	35	180	30
	Special purpose barges	25	75	0
	Fleet vessels***	15	20	20
	Aircraft (rotary and fixed wing)	0	10	20
	Shore and pier	45	30	30

* There may be several activities in 1 day. These numbers provide an estimate of types of range activities over the year.
** Fleet activities in the NAVSEA NUWC Keyport Range Complex do not include the use of surface ship and submarine hull-mounted active sonars.
*** As previously noted, Fleet vessels can include very small craft such as SEAL Delivery Vehicles.

2.3.2.1 Description of Keyport Range Site Alternative and Example Scenario

The proposed Keyport Range Site extension would increase the size of the range from approximately 1.5 nm^2 to 3.2 nm^2 (5.1 km^2 to 11.0 km^2), thereby providing more operational space for NUWC Keyport activities. Only one alternative (Keyport Range Alternative 1, the Preferred Alternative) was identified for this range extension. The range would be extended to the northeast and east, and to the south in Port Orchard Reach near University Point (Figure 2-4a). This would extend the available operating area to include more east-west and north-south maneuvering room, and also incorporate the pier associated with NUWC Keyport. The creation of any new designation on standard NOAA navigational charts would occur as a separate action after the ROD.

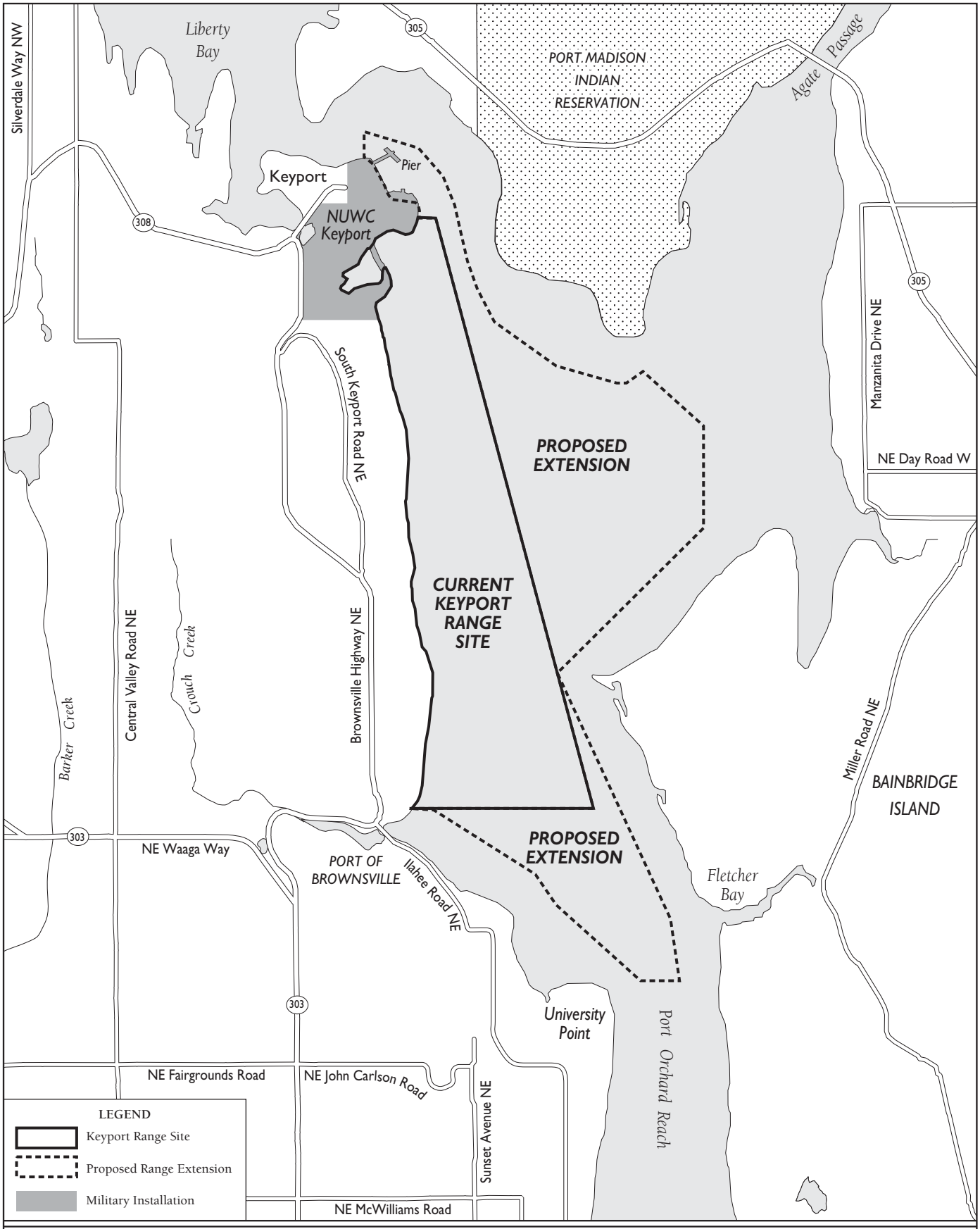

Figure 2-4a
Keyport Range Alternative 1:
Proposed Extension

Figure 2-4b shows a proposed example scenario at the Keyport Range Site associated with the NAVSEA NUWC Keyport Range Complex extension. This example test scenario consists of a series of three events with a UUV operating within the extended Keyport Range Site boundaries. A tracking system may be deployed in each test area for tracking the UUV. The tracking system operates at a frequency of 75 kHz and a source level of less than 195 dB re 1 µPa @ 1 m. This example activity would verify the UUV's capability to perform the following functions:

- *Conduct general bottom target-shape detection*. The UUV's capability to detect bottom target shapes with side-scan sonar would be tested by running north-south lines in a sliding-box pattern survey, at a speed of 4 knots (7 km per hour) and an altitude (i.e., above the sea floor) of 33 ft (10 m). The location is labeled Test Area 3 in Figure 2-4b.
- *Conduct close inspection and bottom target shape detection*. The UUV's capability to detect bottom target shapes in 100 ft (31 m) of water with side-scan sonar would be verified by running north-south lines in a sliding box, at a speed of 4 knots (7 km per hour [kph]) and an altitude of 16 ft (5 m). The location is labeled as Test Area 2 in Figure 2-4b.
- *Obtain UUV's electromagnetic and passive acoustic signature*. Electric, magnetic, and acoustic sensor measurements of the UUV would be obtained by having the UUV make several passes over a transportable electric and magnetic field measurement system installed at the range site. The north-south passes are at least 0.25 nm (0.46 km) in length and at altitudes above the bottom of 16, 33, and 50 ft (5, 10, and 15 m).

The estimated operational time for each of the above events is between 3 and 4 hours for a total of approximately 12 hours, including UUV launch and retrieval. All targets in the proposed range extension areas would be temporary; they would not be permanently mounted on the bay bottom and could be removed when they were no longer necessary for testing activities, which could be up to 2 years. Table 2-7 provides a comparison of current and proposed activities at the Keyport Range Site. Thermal propulsion systems are not currently used in the Keyport Range Site; under the Proposed Action, thermal propulsion test vehicles would be used about 5 times per year, and electrical/chemical propulsion test vehicle use would increase from 45 (currently) to 55 times per year. In addition, the average number of days on which activities would occur at the Keyport Range Site would increase to 60 from the current average of 55 days per year (Table 2-2). The previously discussed scenario provides the reader with an example of how the proposed Keyport Range Site extension would be used. It is not intended to bound the types of activities. Other scenarios would also be conducted within the Keyport Range Site, such as diver/special forces cold water training and transducer calibration for range equipment at the ATF. Potential RDT&E and other NUWC Keyport managed activities cannot all be described by limiting scenarios so the parameters of various propulsion, acoustic, and mechanical systems are reviewed individually. Other types of potential systems to be tested at the Keyport Range Site would be evaluated against the current analysis to determine if they fit within the parameters established in this EIS/OEIS.

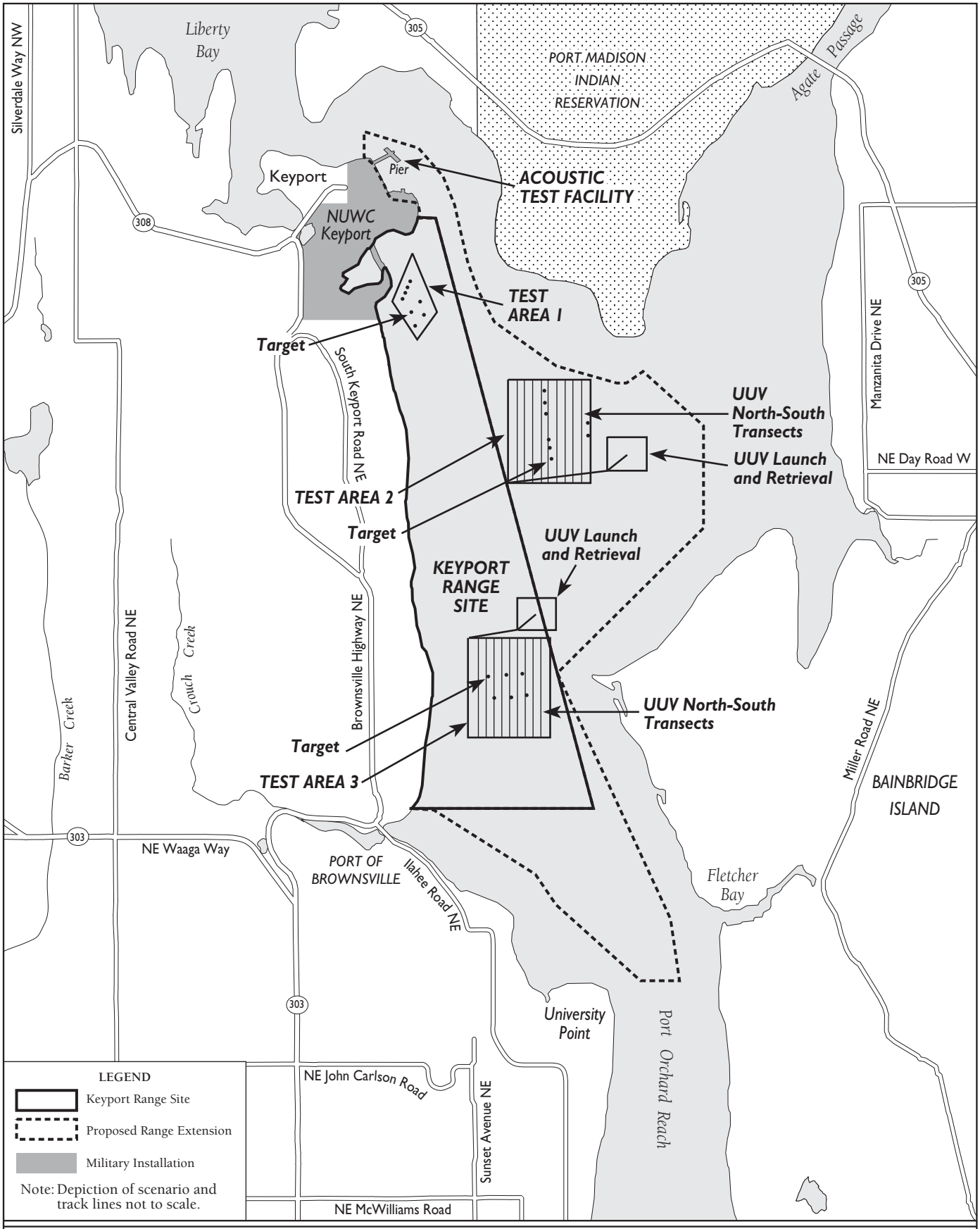

Figure 2-4b
Keyport Range Alternative 1:
Proposed Example Operational Scenario

Table 2-7 Current and Proposed Average Annual Activities at Keyport Range Site*

Range Activity	*Platform/System Used*	*Current*	*Proposed*
Test Vehicle Propulsion	Thermal propulsion systems	0	5
	Electric/Chemical propulsion systems	45	55
Other Testing Systems and Activities	Submarine testing	0	0
	Inert mine detection, classification and localization	5	5
	Non-Navy testing	5	5
	Acoustic & non-acoustic sensors (magnetic array, oxygen)	20	20
	Countermeasure test	5	5
	Impact testing	0	0
	Static in-water testing	10	10
	UUV test	45	45
	UAS test	0	0
Fleet Activities** (excluding RDT&E)	Surface Ship activities	1	1
	Aircraft activities	0	0
	Submarine activities	0	0
	Diver activities	45	45
Deployment Systems (RDT&E)	Range support vessels:		
	Surface launch craft	35	35
	Special purpose barges	25	25
	Fleet vessels***	15	15
	Aircraft (rotary and fixed wing)	0	0
	Shore and pier	45	45

* There may be several activities in 1 day. These numbers provide an estimate of types of range activities over the year.

** Fleet activities in the NAVSEA NUWC Keyport Range Complex do not include the use of surface ship and submarine hull-mounted active sonars.

*** As previously noted, Fleet vessels can include very small craft such as SEAL Delivery Vehicles.

2.3.2.2 Description of DBRC Site Alternatives and Example Scenario

Under this proposal, Alternative 1 would extend the southern boundary of the DBRC Site approximately 10 nm (19 km) to the Hamma Hamma River (Figure 2-5a). Alternative 2 (the Preferred Alternative) would extend the southern boundary to the Hamma Hamma River plus extend the northern boundary to 1 nm (2 km) south of the Hood Canal Bridge (Highway 104) (Figure 2-5a). Both of these alternatives would increase the size of the current operating area (in the case of the Preferred Alternative from approximately 32.7 nm^2 [112.1 km^2] to approximately 45.7 nm^2 [156.7 km^2]) and would afford a straight run of approximately 27.5 nm (50.9 km). The creation of any new designation on standard NOAA navigational charts would occur as a separate action after the ROD. Table 2-8 summarizes the number and types of current and proposed activities for the DBRC Site. With the exception of Unmanned Aerial System (UAS) tests, the number of proposed activities would be the same under either alternative and would remain the same as the current level of use within the DBRC Site. However, the proposed range extensions would allow the opportunity to test systems in areas where freshwater comes from large rivers (e.g., Duckabush River, Hamma Hamma River) to form freshwater layers, changing the dynamics of underwater sound and buoyancy. The proposed range extensions would also allow for a longer vehicle track with the areas connected throughout the DBRC Site.

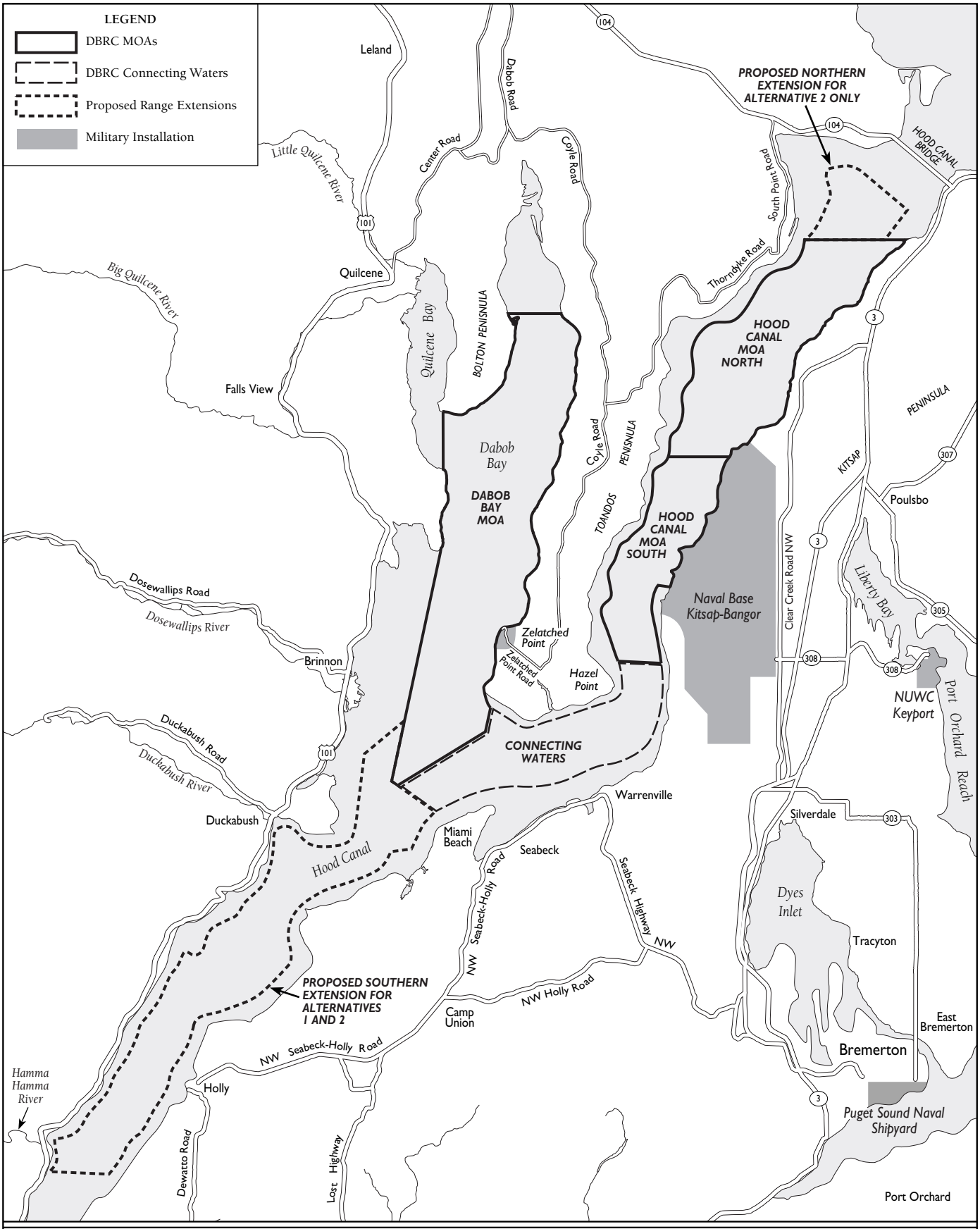

Figure 2-5a
Proposed DBRC Site Extensions:
Alternative 1 and Alternative 2

Table 2-8 Current and Proposed Average Annual Activities at DBRC Site*

Range Activity	*Platform/System Used*	*Current*	*Proposed*
Test Vehicle Propulsion	Thermal propulsion systems	130	130
	Electric/Chemical propulsion systems	140	140
Other Testing Systems and Activities	Submarine testing	45	45
	Inert mine detection, classification and localization	20	20
	Non-Navy testing	5	5
	Acoustic & non-acoustic sensors (magnetic array, oxygen)	10	10
	Countermeasure test	50	50
	Impact testing	10	10
	Static in-water testing	10	10
	UUV test	120	120
	UAS test	0	2
Fleet Activities** (excluding RDT&E)	Surface Ship activities	10	10
	Aircraft activities	10	10
	Submarine activities	30	30
	Diver activities	5	5
Deployment Systems (RDT&E)	Range support vessels:		
	Surface launch craft	180	180
	Special purpose barges	75	75
	Fleet vessels***	20	20
	Aircraft (rotary and fixed wing)	10	10
	Shore and pier	30	30

* There may be several activities in 1 day. These numbers provide an estimate of types of range activities over the year.

** Fleet activities in the NAVSEA NUWC Keyport Range Complex do not include the use of surface ship and submarine hull-mounted active sonars.

*** As previously noted, Fleet vessels can include very small craft such as SEAL Delivery Vehicles.

Under either of the two alternatives, annual activities within the DBRC Site would only increase with the addition of UASs. No other changes in the type of activities would occur nor in the number of average days per year used, currently at 200.

Under the Proposed Action alternatives, a variety of UASs would potentially be tested at the DBRC Site. UASs are remotely piloted or self-piloted (i.e., preprogrammed flight pattern) aircraft that include fixed-wing, rotary-wing, and other vertical takeoff vehicles. They can carry cameras, sensors, communications equipment, or other payloads. UASs can vary in size up to approximately 10 ft (3 m) in length, with gross vehicle weights of a couple hundred pounds. Propulsion types can range from traditional turbofans, turboprops, and piston engine-driven propellers, to electric motor-driven propellers powered by rechargeable batteries (lead-acid, nickel-cadmium, lithium ion), photovoltaic cells, and/or hydrogen fuel cells. At the DBRC Site, UAS testing could support one or more of the following mission areas: intelligence, surveillance, and reconnaissance; antisurface ship warfare and antisubmarine warfare (ASW); mine warfare; communications relay; and derivations of these themes. Since the DBRC Site is not overlain by restricted airspace or a Warning Area, and currently the FAA does not permit UAS operations outside of such designated areas without a Certificate of Authorization (COA), the Navy would apply for a COA in specific places within the DBRC Site for specific test events. Pursuant to FAA policy on UAS operations within the National Airspace System (Interim Operations Approval Guidance [IOAG] 08-01), a COA is required for UAS operations affecting areas of the National Airspace System other than active Restricted, Prohibited, or Warning Areas. FAA's policy regarding operations in the

National Airspace System for UAS in the "experimental category" is provided in FAA Order 8130.34. In general, the Navy conducts RDT&E of UAS in accordance with all FAA regulations (Title 14 Code of Federal Regulations) and Navy UAS operating rules and regulations.

Prior to testing at a range site, a UAS would be ground checked to ensure proper system operations. Takeoff procedures would vary by UAS, using the helopad at Zelatched Point or a portable launcher from a surface vessel. Personnel would use computers to remotely operate the UAS from a command post on a surface ship or located within an existing building at Zelatched Point.

Depending on the UAS being tested, individual flights within the DBRC Site could extend just a few nautical miles or tens of nautical miles. Maximum altitudes for flights would be approximately 3,000 ft (915 m) above mean sea level. Maximum velocities attained would be approximately 50 knots (93 kph). Use of UASs would occur only in accordance with Federal Aviation Administration regulations. The types of UAS tests conducted could include demonstration of aircraft flight worthiness and endurance, surveillance activities using onboard cameras and other sensors, and over-the-horizon targeting. Approximately two flights per year would occur within the DBRC Site and would last up to 2 hours each. At the completion of each flight test, the vehicle would land in a small clearing, the helopad at Zelatched Point, or using retrieval nets from a surface craft.

Figure 2-5b shows a proposed example scenario, the goal of which is to conduct a bottom-mapping survey of the existing and proposed extension boundaries of the DBRC Site using a UUV. The primary operational objective in this scenario would be to obtain an accurate topographical map of the DBRC Site seabed and proposed extensions that are correlated to global coordinates. Secondary operational objectives would include obtaining a radiated noise signature of the UUV and directly comparing the noise between two on-board signature tracking systems.

The total estimated operational test time for this example scenario would be 45 hours, including UUV launch and retrieval. As part of the scenario, a "shadow" track would be used to follow the UUV. A transponder would be mounted on the UUV and a transducer would be mounted on the launch and retrieval vessel that would communicate with the transponder on the UUV to determine its position relative to the launch and retrieval craft; the craft would then "shadow" the UUV as it made its run. During this test, active sonars (including tracking sonars) would emit at source levels of 168–223 dB re 1 µPa @ 1 m and at frequencies of 2 kHz–300 kHz.

2.3.2.3 Description of QUTR Site Alternatives and Example Scenario

The existing QUTR Site covers an area of approximately 48.3 nm^2 (165.5 km^2), beginning approximately 7.5 mi (12.1 km) off the Pacific Coast from Kalaloch. The Site underlies a portion of special use airspace W-237A. QUTR Site Alternative 1 would extend the NUWC Keyport activities to coincide with the entirety of the established W-237A; additionally, the surf zone would be located at Kalaloch. QUTR Site Alternative 2 (the Preferred Alternative) would extend the range activities the same as Alternative 1, but the surf zone would be located at Pacific Beach. QUTR Site Alternative 3 would be the same as Alternative 1, but the new surf zone would be located at Ocean City (Figure 2-6a). The creation of any new designation on standard NOAA navigational charts would occur as a separate action after the ROD. The number of activities within the extended QUTR Site (under any of the alternatives) would increase for vehicle propulsion tests and submarine, inert mine, static in-water, and UUV testing, while UAS and shore deployment system testing would be new to the range. The shore has only been used minimally in the past to maintain cabling. It has also been used by agreement with the Quinault Nation for pre/post-range preparations. Diver Fleet activities would increase by 5/year (Table 2-9).

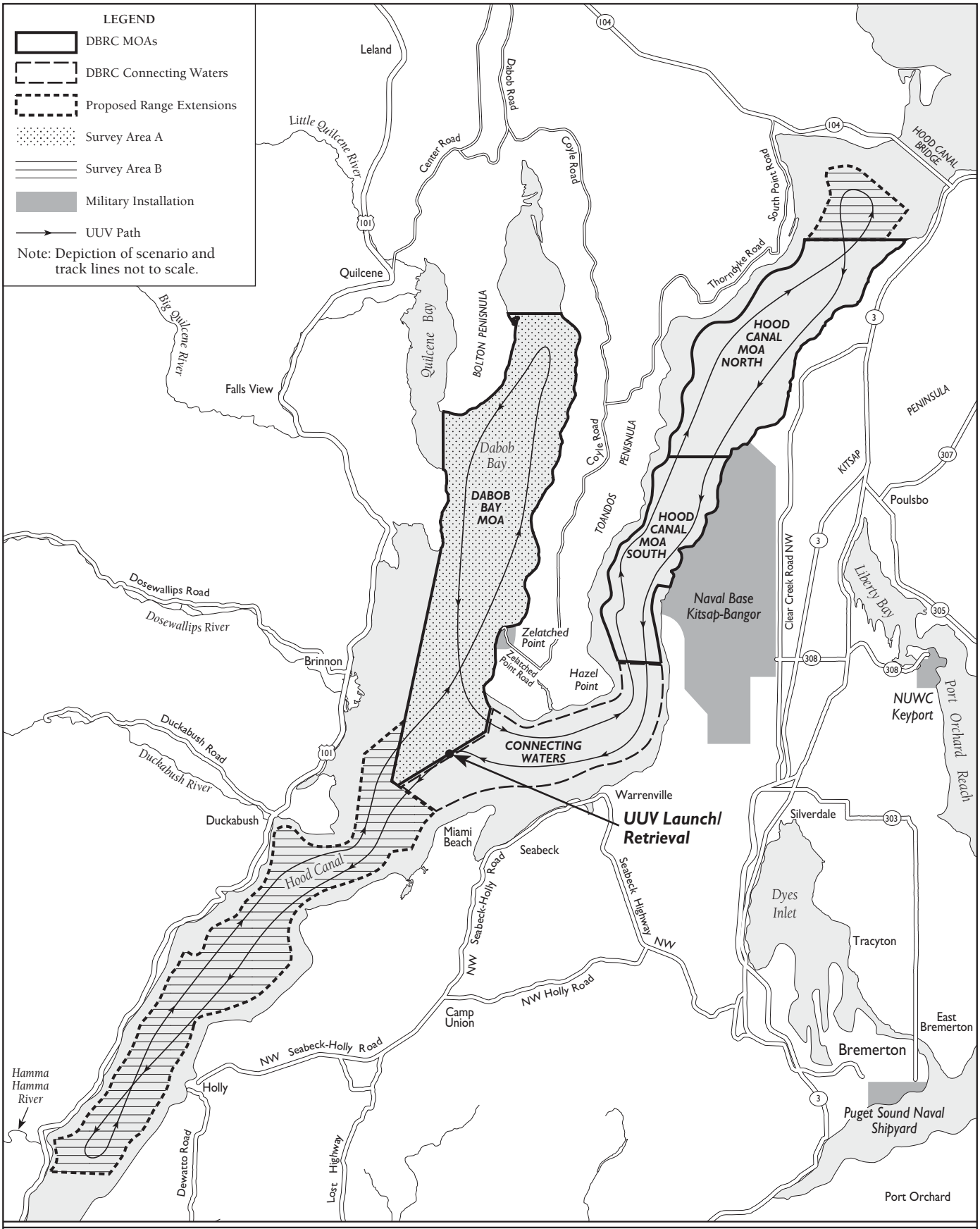

Figure 2-5b
DBRC Site: Example of a Scenario within the Proposed Range Extensions

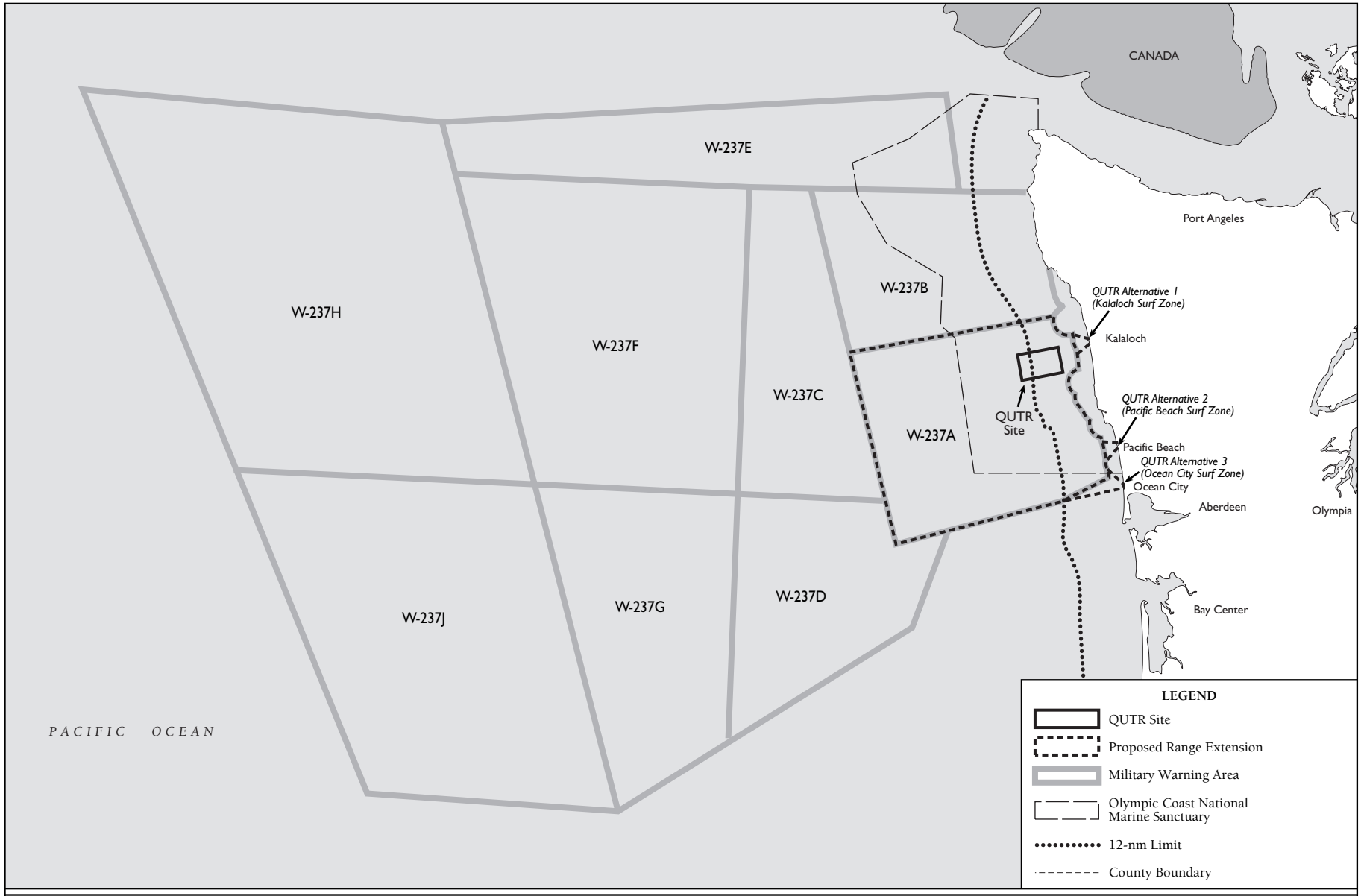

Figure 2-6a
Proposed QUTR Site Extension Common to all Alternatives

Table 2-9 Current and Proposed Average Annual Activities at QUTR Site*

Range Activity	*Platform/System Used*	*Current Activities/ year*	*Proposed Activities/ year*	*Offshore*	*Surf Zone*
Test Vehicle Propulsion	Thermal propulsion systems	20	30	X	
	Electric/Chemical propulsion systems	10	30	X	X
Other Testing Systems and Activities	Submarine testing	10	15	X	
	Inert mine detection, classification and localization	5	10	X	X
	Non-Navy testing	5	5	X	X
	Acoustic & non-acoustic sensors (magnetic array, oxygen)	5	5	X	X
	Countermeasure test	5	5	X	
	Impact testing	5	5	X	
	Static in-water testing	5	6	X	X
	UUV test	20	40	X	X
	UAS test	0	2	X	X
Fleet Activities** (excluding RDT&E)	Surface Ship activities	10	10	X	
	Aircraft activities	10	10	X	
	Submarine activities	30	30	X	
	Diver activities	10	15	X	X
Deployment Systems (RDT&E)	Range support vessels:				
	Surface launch craft	20	20	X	
	Special purpose barges	20	20	X	
	Fleet vessels***	20	20	X	X
	Aircraft (rotary and fixed wing)	20	20	X	X
	Shore and pier	0	30	X	X

* There may be several activities in 1 day. These numbers provide an estimate of types of range activities over the year.

** Fleet activities in the NAVSEA NUWC Keyport Range Complex do not include the use of surface ship and submarine hull-mounted active sonars.

*** As previously noted, Fleet vessels can include very small craft such as SEAL Delivery Vehicles.

The proposed range extension would not result in additional permanent bottom deployed instrumentation. All bottom deployed equipment is temporary and would be recovered. Temporary deployment is defined for this analysis as less than 2 years, which includes planning, funding, and availability to retrieve/recover. Extending the operating area would provide a more varied range of bottom topography than the existing permanently instrumented range site. The current instrumented site is a gently sloping, hard, reverberant sand bottom with up to approximately 300 ft (91 m) of depth. The proposed extension offers multiple types of substrate with mud, rocks, and canyons as deep as 6,000 ft (1,829 m). This would enable deeper runs and variations in bottom type and acoustic characteristics. Sensors could also be used in multiple environments from shallow to deep simulating other coastlines with surf, cross currents, and distant shipping noise. This proposed extension would also allow for combined test and training activities with larger area for maneuverability of Fleet platforms and for longer vehicle tracks.

As with the DBRC Site, a variety of UASs may be tested at the QUTR Site under any of the action alternatives. UAS testing at the QUTR Site could support one or more of the following mission areas: intelligence, surveillance, and reconnaissance; antisurface ship warfare and ASW; mine warfare; communications relay; and derivations of these themes.

Prior to testing at the range site, a UAS would be ground-checked to ensure proper system operations. Takeoff procedures could utilize a portable launcher from a surface vessel. Personnel would remotely operate the UAS from a command post on a surface ship or shore.

Depending on the UAS being tested, individual flights within the QUTR Site could extend just a few nautical miles or many tens of nautical miles. Maximum altitudes for flights would be approximately 3,000 ft (914 m) above mean sea level. Maximum velocities attained would be approximately 50 knots (93 kph). Use of UASs would only occur in accordance with FAA regulations and coordination with NAS Whidbey Island. For any activities involving UASs within 3 nm of the coast (and therefore outside W-237A), NUWC Keyport would apply for a COA from FAA for specific test events. The COA would be required for UAS operations in the airspace between the launch point and the eastern boundary of W-237A (3 nm offshore); for UAS operations conducted within W-237A, no COA is necessary and use of the airspace would be scheduled with the NAS Whidbey Island range scheduling office. As noted previously for DBRC, the Navy conducts RDT&E of UAS in accordance with all FAA (Title 14 Code of Federal Regulations) and Navy UAS operating rules and regulations. The types of tests conducted could include demonstration of aircraft flight worthiness and endurance, surveillance activities using onboard cameras and other sensors, and over-the-horizon targeting. Approximately two flights per year would occur within the QUTR Site and would last up to 2 hours each. At the completion of each flight test, vehicle landing would occur using retrieval nets from a surface craft.

Figure 2-6b shows an example scenario for proposed range activities extending from the deep area of the proposed QUTR Site extension in to the shallow portion of the range. This example scenario consists of ranging a UUV in the southwest corner of W-237A in water up to 6,000 ft (1,829 m) deep. A portable range system would be set up prior to the torpedo run to provide 3-D underwater tracking. A NUWC Keyport range craft or other surface vessel often serves as the control center while activities take place at the QUTR Site. The UUV would be launched from and retrieved by a Navy Fleet destroyer. Inert mine shapes would be temporarily planted as targets (Figure 2-6b shows these deployed at 6 nm [11.1 km] from shore). An additional vessel would deploy an over-the-side active acoustic target transponder. The portable tracking range components would be deployed and retrieved from the launch craft. The launch craft would serve as the control center for the portable tracking range and also as the overall range activities control center. In addition to the tracking noted above, the range craft and portable tracking range components could be equipped with GPS tracking capabilities. The estimated test time would be 8 hours for the test and 2 to 10 days for set up and removal of the range gear.

During this test, active sonars would operate at levels from 168 to 215 dB re 1 µPa @ 1 m and at frequencies between 12 and 75 kHz. The primary objective of this test would be to evaluate the endurance, navigational, and search capabilities of a UUV. A passive acoustic system would be deployed to record acoustic events to compare with data from the active acoustic system.

The proposed extension would also include a surf-zone corridor from the shoreline to the boundary of W-237A. The surf-zone component would extend north to south 5 nm (9 km) along the eastern boundary of W-237A, extend approximately 3 nm (6 km) to shore along the mean lower low water line, and encompass 1 mi (2 km) of shoreline. Surf-zone activities would be conducted from an area on the shoreline and seaward. There are three surf-zone alternatives under consideration that are discussed later in this section. Figures 2-6c and 2-6d show the proposed QUTR Site extension within W-237A and the three surf-zone alternatives.

Figure 2-6e portrays an example scenario for proposed surf-zone activities; this scenario could be conducted within any of the surf-zone alternative locations. Other options for activities in QUTR Site include, but are not limited to, shallow water bathymetry sensing, subbottom profiling, UUV surveillance, or UAS testing as appropriate. Fleet platform participation is optional and contributes to realistic Fleet training. This is a robust example of a complicated activity with coordinated shore and sea support.

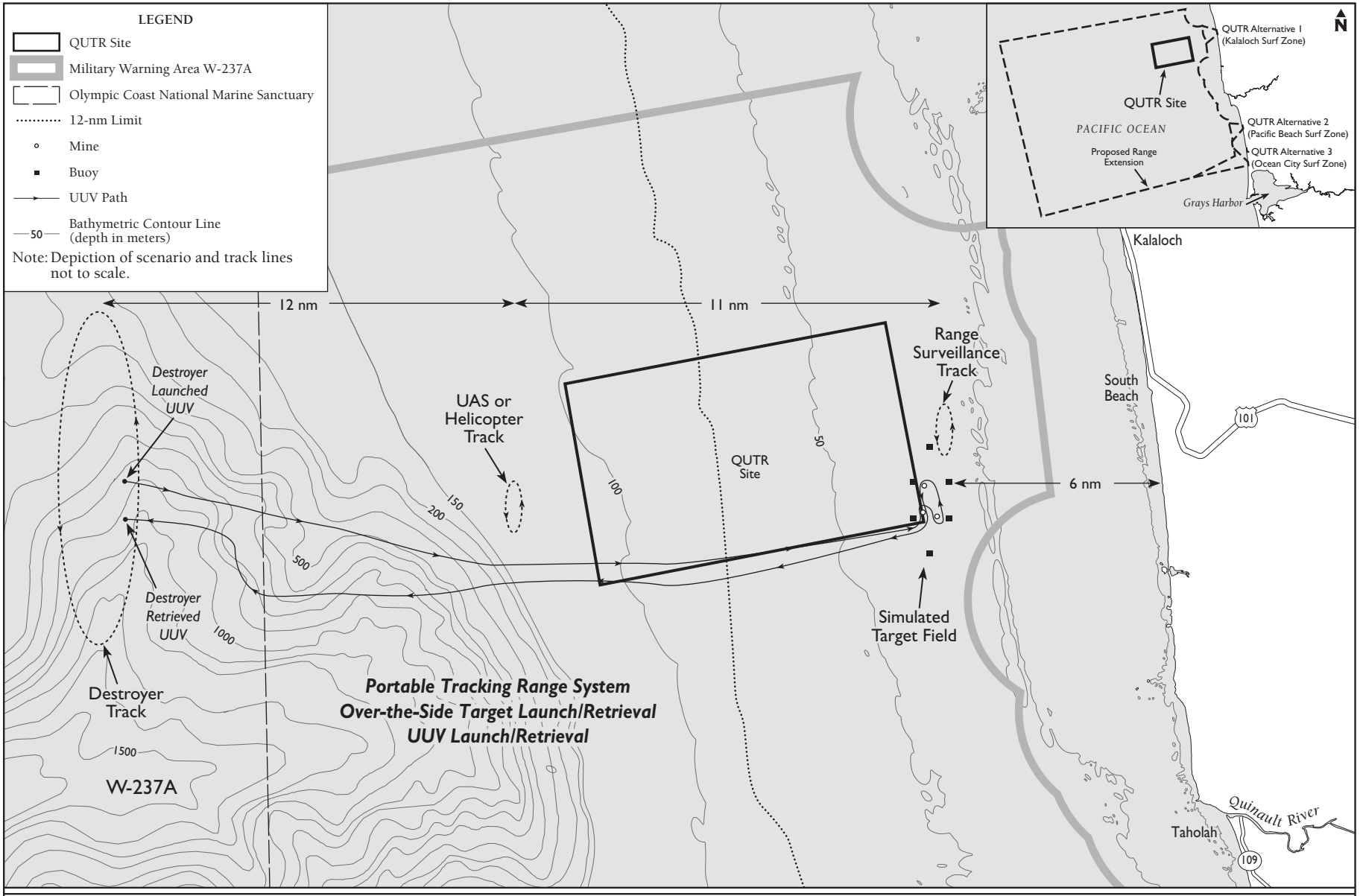

Figure 2-6b
QUTR Site: Example Deepwater Scenario within the Proposed Extension

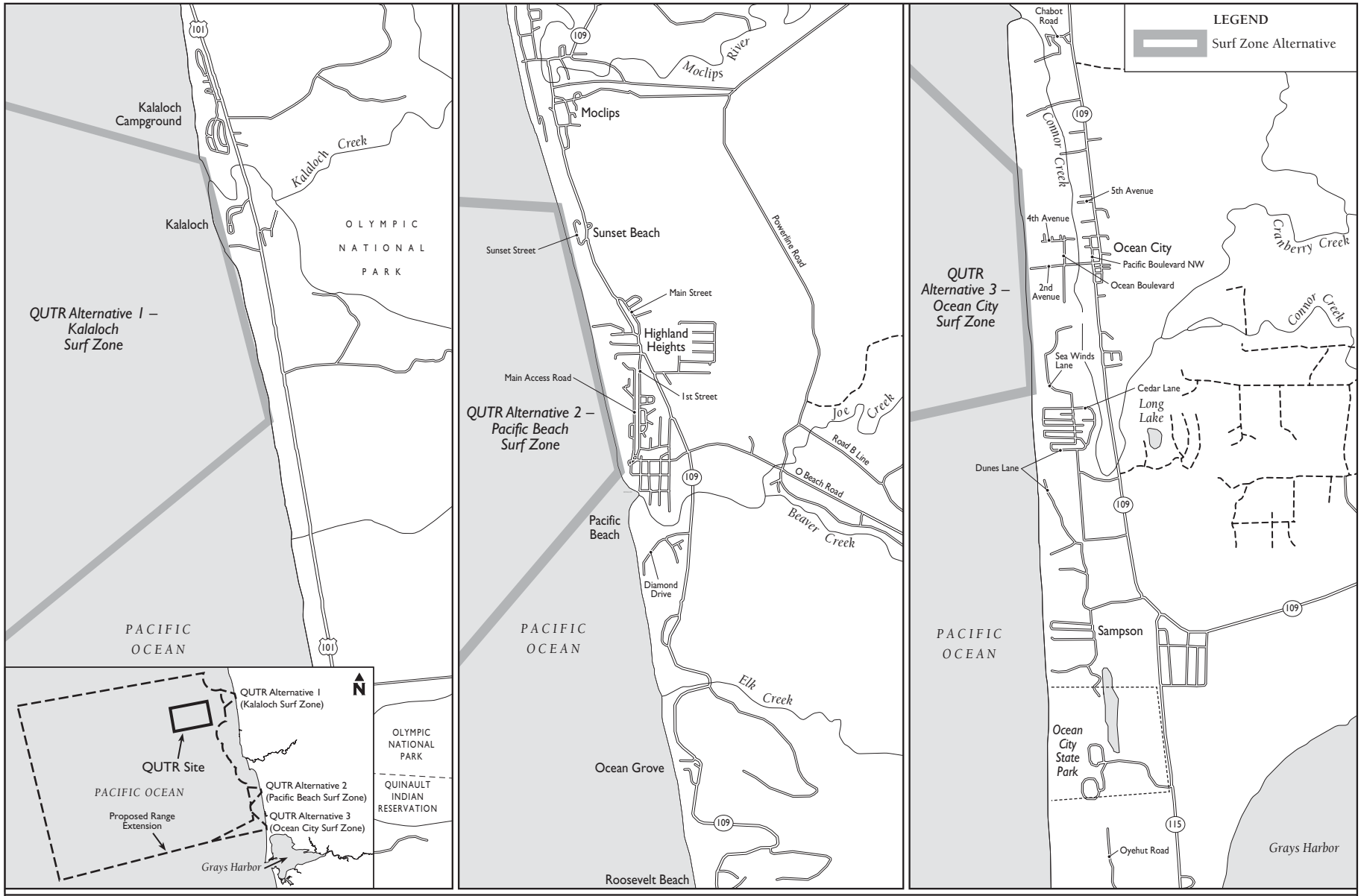

Figure 2-6c
QUTR Site Proposed Surf Zone Access: Alternatives 1, 2, and 3

looking south

looking west

looking north

(a) Representative Views of the Beach at Kalaloch

looking south

looking east

looking north

(b) Representative Views of the Beach at Pacific Beach

looking south

looking east

looking north

(c) Representative Views of the Beach at Ocean City

Figure 2-6d
Photos of Surf Zone Alternative Locations

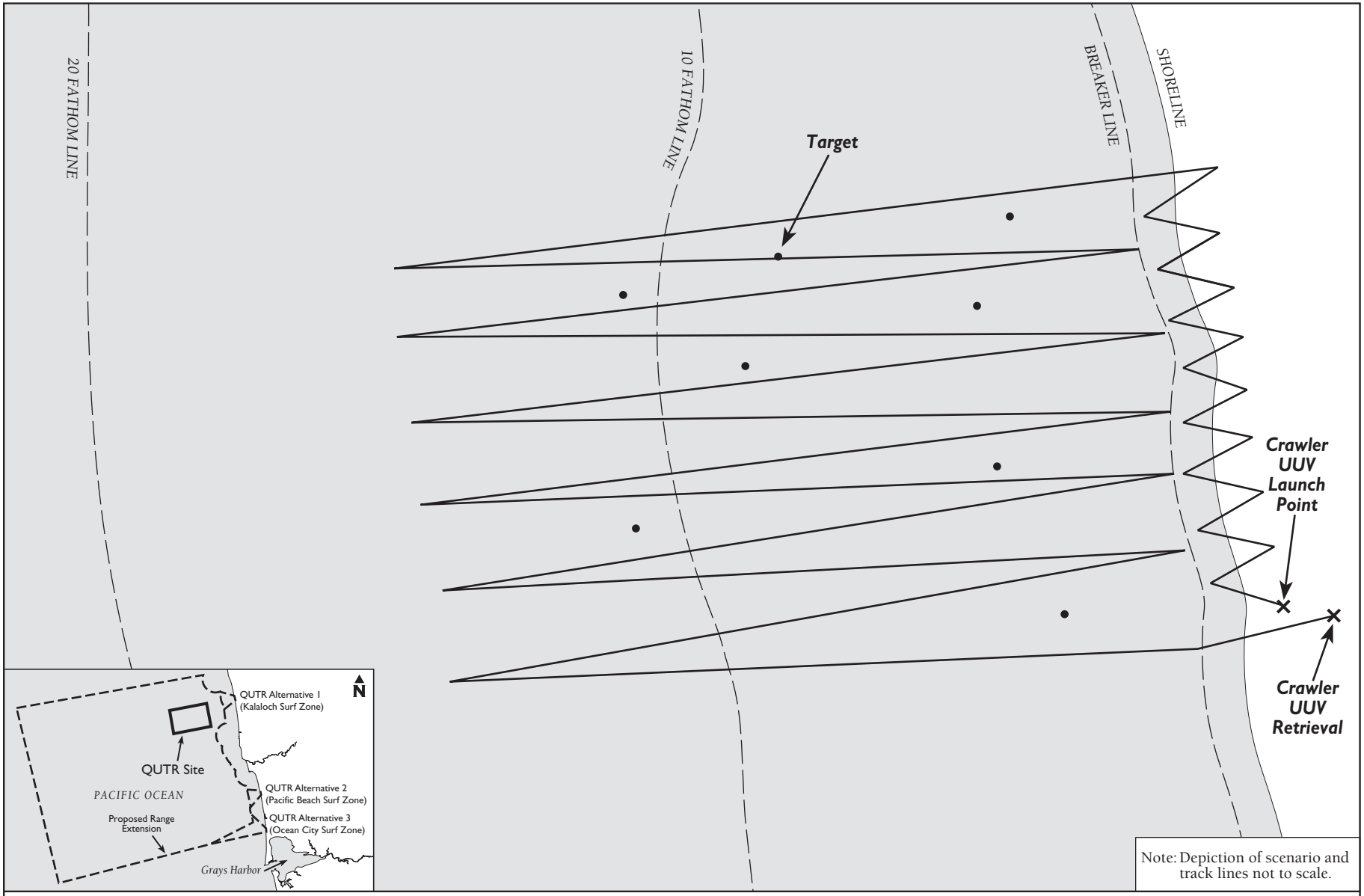

Figure 2-6e
QUTR Site: Example Surf Zone Scenario within the Proposed Extension

This example scenario consists of testing a bottom-crawling robotic vehicle in the surf-zone area in water depths from 0 to 100 ft (0 to 31 m). The representative crawler would carry a payload of several acoustic emitters, including communication/navigation equipment and sonars. Generally, one sonar unit and one communication/navigation aid system would be used on a crawler at any time. The surf-zone area would be planted with temporary target fields to test the crawler sensors. A small boat and divers would potentially be used as a backup for launch and retrieval of the crawler vehicle. Vehicle command and control would occur via a radio frequency (RF) modem mounted in a float connected to the crawler using a tether. RF and video data would then be transmitted by additional RF modems and a RF video transmitter mounted in the float.

A temporary beach station, consisting of various electronics paired with the electronics on the float, would typically be located close to the waterline. A small 1-kilowatt gasoline generator could be used as the power source for the command and control equipment. A secondary containment would be used for the gas generator gasoline container. The estimated operational test time would be 8 hours with 3 days for preparation and gear retrieval. During the test time, the public would be kept clear from a small portion of the beach to ensure the safety of the public and security of equipment.

Several target shapes would be deployed in the surf-zone test area in water greater than 10 ft (3 m) deep; additional targets would be placed in depths of less than 10 ft (3 m). The target shapes, crawler vehicle, and associated support hardware described above may be transported via roadways from NUWC Keyport to the surf-zone test area, deployed from the truck, and recovered during low tide. Test activities could begin at high tide (10 ft [3 m]); tidal shift allows target shapes to be deployed on the beach and meet required depths for test operation. At the conclusion of the test, all equipment would be returned to the NUWC Keyport shop. If a small boat were used, it would be transported by trailer to the coast from NUWC Keyport and launched near the surf-zone test area.

QUTR Alternative 1 (Kalaloch Surf Zone Access Area)

Under this alternative, the extension of QUTR Site boundaries (to the full extent of W-237A) and associated activities, as described above and in Section 2.2.3, would occur. The surf zone would be located at Kalaloch. The shoreline associated with the Kalaloch alternative is part of the Olympic National Park near Kalaloch and the offshore area is within the OCNMS. The proposed surf-zone area begins just south of the Kalaloch campground at the high water mark and extends 1 mi (2 km) south along the shoreline. Beach access would likely occur from either the Kalaloch campground or from one of the existing beach trails. However, vehicles cannot be driven down to the beach from these access points because of the bluff leading down to the beach, so equipment delivered by land would need to be lowered to and raised from the beach at these locations. Equipment could also be brought in from sea by surface vessels (e.g., Helicopter, Zodiac, landing craft).

QUTR Alternative 2 – Preferred Alternative (Pacific Beach Surf Zone Access Area)

Under this alternative, the extension of QUTR Site boundaries (to the full extent of W-237A) and associated activities, as described above and in Section 2.2.3, would occur. The surf zone would be located at Pacific Beach. The Pacific Beach surf-zone alternative comes to shore within the OCNMS. A Navy Morale, Welfare, and Recreation (MWR) facility is on a high bluff above the shoreline near State Highway 109. The Pacific Beach Navy regional facility also includes buildings, a fenced area separate from the more public area, and a helicopter landing pad. These would be used for basing equipment and personnel for shore activities. There are two beach access roads: Annelyde Gap Road (also referred to as Homer Street) leading down from the bluffs 0.5 mi (0.8 km) to the north of the southern boundary, and Moclips Gap (also referred to as Pacific Street) approximately 1 mi (2 km) north of the northern

boundary. The rules for this location as promulgated by the State of Washington prohibit non-governmental motor vehicles from the southern boundary to Annelyde Gap Road from April 15 through the day following Labor Day each year, except during recreational razor-clam season (Washington State Legislature 1988). The beach north of Annelyde Gap Road is open for driving year-round. Starting from the northern portion of the shoreline, single-family homes are situated close to and fronting the high tide area. The beach is designated state highway property. The intertidal zone is managed by the Washington State Parks and Recreation Commission. Based on these assets, this is the preferred alternative.

QUTR Alternative 3 (Ocean City Surf Zone Access Area)

Under this alternative, the extension of QUTR Site boundaries to the full extent of W-237A and associated activities as described above and in Section 2.2.3, would occur. The surf zone would be located at Ocean City. The Ocean City surf-zone alternative comes to shore near State Highway 109, south of the boundary of the OCNMS. There are several beach access roads to the shore area including the Ocean City State Park Access Road, 0.5 mi (0.8 km) to the north of the southern boundary; Chance A La Mer Beach Road, approximately 2.7 mi (4.3 km) south of Ocean City Beach Road; and Benner Gap Road, approximately 3 mi (5 km) north of Ocean City Beach Road. The rules for this location as promulgated by the State of Washington prohibit non-governmental motor vehicles from Ocean City Beach Road north from April 15 through the day following Labor Day each year, except during recreational razor clam season (Washington State Legislature 1988). The beach south of Ocean City Beach Road is open for driving all year. This area has low dunes and no obvious bluff. Homes are not located on the waterfront, but there are residences inland from the beach. The Quinault Beach Resort and Casino is visible to the south but not within this proposed surf-zone alternative. The beach is designated state highway property. The intertidal zone is managed by the Washington State Parks and Recreation Commission.

2.3.3 Representative Acoustic Sources

Table 2-10 lists representative acoustic sources and the associated frequency, source level, and total number of hours of proposed use per year for all three sites. Section 1.3.3.8 describes these sources in more detail. The majority of the hours of use would come from UUV testing and the use of subbottom profilers. Range targets and test vehicles represent a much smaller portion of the total hours of use of acoustic sources.

Table 2-10 Representative Acoustic Sources for Marine Mammal Acoustic Effects Analysis

Acoustic Source	*Frequency (kHz)*	*Source Level (dB re 1 µPa @ 1 m)*	*Hours of Use per Year*
Subbottom Profiler	4.5	207	192
UUV 1	15	205	166
UUV Acoustic Modem	10	186	166
UUV 2	150	220	166
Range Target	5	233	9
Test Vehicle 1	20	233	7
Test Vehicle 2	25	230	7
Test Vehicle 3	30	233	7

The eight acoustic sources listed in Table 2-10 are a subset of the types of acoustic sources that would be used on the NAVSEA NUWC Keyport Range Complex and have been identified as representative of proposed range activities for purposes of modeling acoustic impacts (i.e., test vehicles listed in table 2-10 are theoretical in nature and representative of upper boundaries of actual vehicles for modeling purposes

only). Associated hours listed in table 2-10 are cumulative in nature within the designated parameters. To ensure that any new range systems can be evaluated when applying this EIS/OEIS analysis, a set of parameters was established based on frequencies and output levels to ensure there was a range of types of acoustic sources to consider. These EIS/OEIS results will be used to determine which systems can be tested by NUWC Keyport on the NAVSEA NUWC Keyport Range Complex sites without further NEPA analysis. For a more detailed discussion of system parameters and the acoustic modeling procedures and assumptions, refer to Section 3.5. The NUWC Keyport mission to test active acoustic systems is limited to those acoustic sources described in this EIS/OEIS. Further, NUWC Keyport proactively monitors and subsequently limits acoustic devices and sensors that have operational capacities outside the acoustic ranges specified herein.

2.3.4 Range Operating Policies and Procedures

Operating policies and procedures, as described in NUWC Keyport Report 1509, *Range Operating Policies and Procedures Manual (ROP)*, are followed for all NUWC Keyport range activities. NUWC Keyport would continue to implement the ROP policies and procedures within the NAVSEA NUWC Keyport Range Complex with implementation of any of the proposed range-site alternatives, including the No-Action Alternative. The ROP is followed to protect the health and safety of the public and Navy personnel and equipment as well as to protect the marine environment. The policies and procedures address issues such as safety, development of approved run plans, range operation personnel responsibility, deficiency reporting, all facets of range activities, and the establishment of 'exclusion zones' to ensure that there are no marine mammals within a prescribed area prior to the commencement of each in-water exercise within the NAVSEA NUWC Keyport Range Complex. All range operators are trained by NOAA in marine mammal identification, and active acoustic activities are suspended or delayed if whales, dolphins, or porpoises (cetaceans) are observed within range areas. Table 2-11 provides a summary of selected ROP sections and other range procedures. The ROP contains additional sections; only the sections that specifically apply to this analysis are covered here.

The ROP sections shown in Table 2-11 apply to current NUWC Keyport activities at the Keyport Range Site, DBRC Site, and QUTR Site, and they would also apply to proposed activities within the current and proposed range site boundaries. The policies and procedures outlined in the ROP are continually being updated as new environmental and health and safety information becomes available. In addition, the ROP may be revised in the future to reflect any conservation or mitigation measures that arise from ongoing agency consultations (e.g., NMFS) and permitting process regarding this EIS/OEIS. With respect to UAS operations, NUWC Keyport is updating the ROP to comply with current FAA policies and procedures relevant to UAS activity in the National Airspace System, including implementing a review process for experimental UAS operations in the Range Complex in accordance with FAA Order 8130.34.

Table 2-11 NAVSEA NUWC Keyport Range Complex ROP Sections and General Flight Rules

ROP	*ROP Implementation*
ROP 10-1 (Revision E, June 2004)	• Establishes policies and procedures to be followed in the event of an OTTO Fuel II spill within the NAVSEA NUWC Keyport Range Complex or aboard a NUWC Keyport craft during the loading/off-loading, retrieval/recovery, or stowage of test units containing OTTO Fuel II; and the handling of OTTO Fuel II waste material or reclaimable liquids by range or craft personnel.
ROP 10-4 *Safety/Environmental Requirements and Operational Restrictions for Test Units* (Revision E, June 2004)	• Establishes safety/environmental requirements and operational restrictions for all test units (this includes but is not limited to, torpedoes, mobile ASW targets, inert mines, UUVs, and research and developmental vehicles) to be tested within the NAVSEA NUWC Keyport Range Complex or used in support of range activities.

Table 2-11 NAVSEA NUWC Keyport Range Complex ROP Sections and General Flight Rules (Continued)

ROP	*ROP Implementation*
ROP 6-4 *Range Operations and Marine Mammals* (Revision E, June 2004)	• Ensures that NAVSEA NUWC Keyport Range Complex personnel from NUWC Keyport are in compliance with OPNAVINST 5090.1C, *Navy Environmental and Natural Resources Program Manual*; MMPA; and Endangered Species Act (ESA). In particular, the following marine mammal protection measures are implemented per ROP 6-4: 1. Range activities shall be conducted in such a way as to ensure marine mammals are not harassed or harmed by human-caused events. 2. Marine mammal observers are on board ship during range activities. All range personnel shall be trained in marine mammal recognition. Marine mammal observer training is normally conducted by qualified organizations such as NOAA/National Marine Mammal Lab (NMML) on an as needed basis. 3. Vessels on a range use safety lookouts during all hours of range activities. Lookout duties include looking for any and all objects in the water, including marine mammals. These lookouts are not necessarily looking only for marine mammals. They have other duties while aboard. All sightings are reported to the Range Officer in charge of overseeing the activity. 4. Visual surveillance shall be accomplished just prior to all in-water exercises. This surveillance shall ensure that no marine mammals are visible within the boundaries of the area within which the test unit is expected to be operating. Surveillance shall include, as a minimum, monitoring from all participating surface craft and, where available, adjacent shore sites. 5. The Navy shall postpone activities until cetaceans (whales, dolphins, and porpoises) leave the project area. When cetaceans have been sighted in an area, all range participants increase vigilance and take reasonable and practicable actions to avoid collisions and activities that may result in close interaction of naval assets and marine mammals. Actions may include changing speed and/or direction and are dictated by environmental and other conditions (e.g., safety, weather). 6. In accordance with the MMPA and ESA, which address marine mammal protection, an "exclusion zone" shall be established and surveillance will be conducted to ensure that there are no marine mammals within this exclusion zone prior to the commencement of each in-water exercise. For cetaceans (whales, dolphins, and porpoises), the exclusion zone must be at least as large as the entire area within which the test unit may operate, and must extend at least 1,000 yards (914.4 m) from the intended track of the test unit. For pinnipeds, the exclusion zone extends out 100 yards (91 m) from the intended track of the test unit. 7. The minimum marine mammal exclusion zones defined above are sufficient to mitigate the effects of the acoustic energy transmitted by the test units, range tracking equipment, and the range target simulators currently in operation on U.S. ranges as of this writing. The exclusion zones specified in ROP 6-4 meet the requirements of Navy (2002a, 2003b) and NOAA (1993) and thereby ensure that active acoustic emissions from the acoustic sources currently in use do not constitute marine mammal harassment. 8. The NMFS recommendation that vessels not approach within 100 yards (91 m) of marine mammals shall be followed to the extent practicable considering human and vessel safety priorities. All Navy vessels and aircraft, including helicopters, are expected to comply with this directive. This includes marine mammals "hauled-out" on islands, rocks, and other areas such as buoys. 9. In the event of a collision between a Navy vessel and a marine mammal, NUWC Keyport activities will notify the Navy chain of Command, which would result in notification to NMFS. 10. Procedures for reporting marine mammal sightings on the NAVSEA NUWC Keyport Range Complex shall be promulgated, and sightings shall be entered into the Range Operating System and forwarded to NOAA/NMML Platforms of Opportunity Program.
Flight Rules for Wildlife (per Navy 2001a, 2002a)	General flight rules for terrestrial and marine wildlife include: • Flights over land must be at least 1,000 ft (305 m) above the level of the land; • Flights over water must be at least 500 ft (152 m) above the level of the sea; and • Flights within 500 yards (457 m) of the shore (beach) must be at least 1,000 ft (305 m) above sea level. • A 656-ft (200-m) lateral no-fly area around bald eagle nests for all aircraft (Navy 2001a, 2002a).

2.4 ALTERNATIVES CONSIDERED BUT ELIMINATED FROM DETAILED CONSIDERATION

As introduced in Section 2.1, selection criteria were established based on the purpose and need for the Proposed Action to help determine the set of reasonable alternatives that would be carried forward for detailed consideration in this EIS/OEIS. Navy ranges in other locations were considered unreasonable as they would not satisfy the criterion for proximity to NUWC Keyport and its existing assets, nor would they support the mission of NUWC Keyport to provide test and evaluation services in a wide range of environments that represent real war-fighting conditions for emerging manned and unmanned vehicle program activities.

For the Keyport Range Site and DBRC Site, larger range extensions were initially considered to further enhance proposed activities. However, the sizes and locations of these potential range extensions were considered to be above and beyond the basic purpose and need of the Proposed Action. Therefore, these range extension alternatives were not carried forward for analysis.

For the QUTR Site, three additional surf-zone alternatives were initially considered: Sea Lion Rock, South Beach, and Copalis Beach (Figure 2-7). The location at Sea Lion Rock was initially considered in lieu of the Kalaloch alternative, but was eliminated from consideration due to concerns from the Quinault Nation, regulators, and the public. In a scoping response letter dated December 1, 2003, the Quinault Nation formally requested "…that you [Navy] move any proposed shore landing area off its Reservation lands and preferably outside of its U&A [Usual and Accustomed] area." Although NUWC Keyport had been allowed by the Quinault Nation to use the Reservation land for activities in the 1990s, the Quinault Nation land is private property and each proposed use would have to be negotiated on a Government-to-Government basis with the Quinault Nation. In light of this, the Navy respects the current wishes of the Quinault Nation and is looking at surf-zone alternatives off reservation land.

The South Beach and Copalis Beach locations were eliminated from consideration due to the availability of more suitable locations nearby (Pacific Beach and Ocean City, respectively), which provide access to the beach from the road, and ideal proximity to W-237A. The South Beach location does not provide ready access to the beach from the road for equipment and is not near existing facilities. The Copalis Beach location, when fanned out to join W-237A, would still be within OCNMS. Therefore, Copalis Beach did not meet the request from the OCNMS to analyze an alternative outside the sanctuary.

Alternative configurations of the proposed QUTR Site extension were also considered but eliminated from further consideration in the EIS/OEIS. The primary criteria that led to the proposed QUTR Site extension area (in addition to the need for a surf zone area) was the need for variable water depths up to 4,500 feet. Bathymetry charts indicate that such depths occur well to the west of the existing QUTR Site. Configurations of the QUTR Site extension that were smaller than the one proposed would not reach these deeper areas and therefore would not satisfy this criterion. Since current and proposed NUWC Keyport activities are consistent with those already conducted in the existing Pacific Northwest Ocean Surface/Subsurface Operating Area (OPAREA), extension of the QUTR Site to correspond to the much larger OPAREA was also considered; however, such a large increase in the size of the QUTR Site would be above and beyond the purpose and need for the action. The existing boundary of the W-237A Warning Area represented a close approximation of the area required to minimally satisfy the water depth and other criteria, so this boundary was selected as the proposed QUTR extension area. The correlation with the W-237A boundary made sense in order to avoid having multiple boundary lines in the same general area for distinct but related military activity areas.

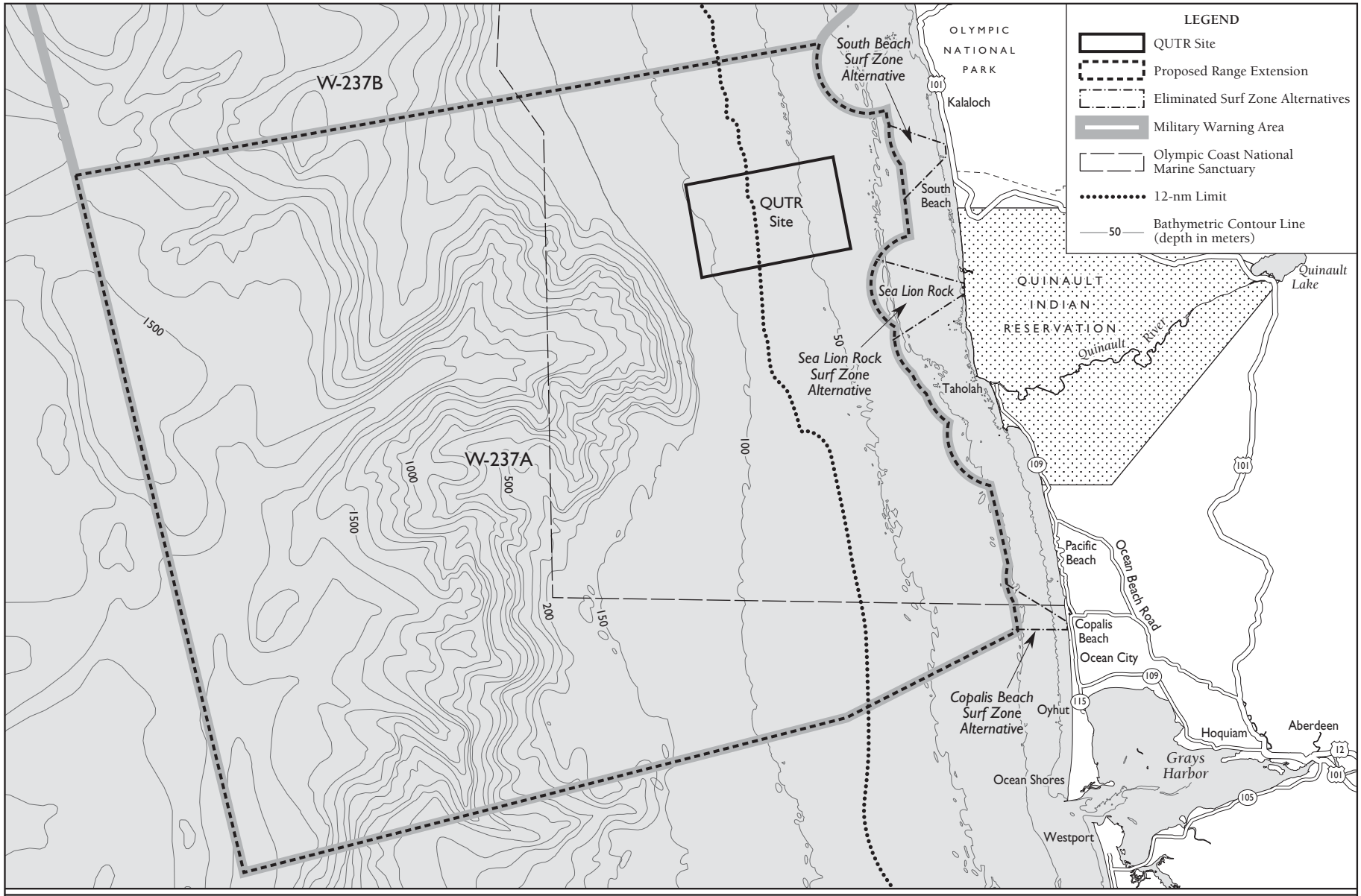

Figure 2-7
Eliminated Surf Zone Alternatives